THE VETERINARY RECORD

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

No. 37. SEPTEMBER 9, 1944 VOL. 56.

Crystal Violet Vaccine against Swine Fever

A Field Trial

T. M. DOYLE AND W. J. McILROY,

VETERINARY LABORATORY, MINISTRY OF AGRICULTURE, WEYBRIDGE

In view of the satisfactory results obtained under laboratory conditions in the immunisation of pigs against swine fever with crystal violet vaccine (Doyle, 1942), which confirmed the original work reported in America (McBryde and Cole, 1936), the Ministry of Agriculture decided to submit the vaccine to a trial under the varying conditions of diet, hygiene and management that obtain on farms. A small preliminary trial (Matthews and Doyle, 1943) carried out on 17 herds suggested that it would probably prove as effective in the field as it had in the laboratory.

Cole and McBryde (1941) reported the results of tests made in America under field conditions on 236 herds containing 12,572 pigs. In two herds sickness occurred after vaccination, but investigation showed that it was not caused in either case by swine fever virus. A total of 647 pigs taken at random from 166 herds were tested for immunity by the inoculation of virus at intervals of from two to 12 months after vaccination; the majority of the pigs were tested between the fifth and eighth month after vaccination. The results were that 83 per cent. proved to be adequately protected, 12 per cent. showed severe reactions and 6 per cent. died.

As many of these pigs were probably the progeny of sows that had been immunised by the serum-virus method and as a considerable number of them had been vaccinated before weaning, the results were re-examined so as to include only those vaccinated after weaning and tested for immunity up to eight months after vaccination. The results were that 89 per cent. proved to be adequately protected, 10 per cent. showed severe reactions and 1 per cent. died.

A committee was appointed by the Ministry of Agriculture, comprising representatives of the National Farmers' Union, the National Veterinary Medical Association, the Animal Health Division of the Ministry, the Veterinary Laboratory, Weybridge, and Professor R. A. Fisher, Cambridge University, to draw up plans for a field trial of the vaccine; this committee was later taken over by the Agricultural Research Council who undertook also to bear the cost of the trial.

EXPERIMENT PROGRAMME

The committee drew up the following experiments:—

Experiment No. I.—To compare the degree and duration of immunity conferred by vaccination on the progeny of crystal violet vaccinated sows (*a*) before weaning, (*b*) after weaning.

Experiment No. II.—To compare the degree and duration of immunity conferred by vaccination on pigs in commercial breeding-rearing herds (*a*) before weaning, (*b*) after weaning.

Experiment No. III.—Similar to No. II except that the herds, in addition to their own breeding and rearing stock, contained store pigs introduced from outside sources.

Experiment No. IV.—In this experiment it was proposed to vaccinate about 2,000 pigs, leaving 20 per cent. untreated as controls, in a number of swill-fed herds. It was believed that in the normal course of events some of these herds would probably become infected with swine fever and permit the results of vaccination to be seen under the poor conditions of hygiene and management that frequently obtain in herds of this type. Having regard, however, to the exceptionally low incidence of swine fever in the country during this period, it was decided after four herds (438 pigs) had been vaccinated to discontinue the experiment and to substitute for it No. V.

Experiment No. V.—Seven groups of pigs, each group consisting of five vaccinated and five controls, usually from the same litter, were sent from the Laboratory to natural outbreaks of the disease in commercial herds and put in contact with infected stock; it was stipulated that the laboratory pigs should be put in contact with not less than seven infected pigs.

Test Viruses.—Two American viruses were used in these experiments for testing the immunity of the vaccinated pigs. These viruses have been used on a considerable scale in experimental work over the course of years at the Laboratory and neither has ever failed, either by inoculation or contact, to kill an untreated pig.

Recording the Results of Immunity Tests.—In assessing the results of immunity tests note was made only of those pigs exhibiting moderate or severe reactions. A considerable number of animals showed, however, a brief period of dullness between the fifth and seventh day, but owing to the shortage of trained personnel and the considerable number of animals involved, it was found impracticable to take daily temperatures. A further difficulty encountered, especially in the recognition of slight reactions, was caused by the poor quality and frequent changes in composition of war-time diets. When pigs on a normal diet fail to finish one or two feeds, it usually signifies that they are undergoing a systemic reaction, but with the food now available the leaving of a part of one or more feeds is of little significance. Pigs that showed slight or moderate reactions were regarded as having been adequately protected and are shown in the tables in the "protected" group; pigs that reacted severely were considered to have been inadequately protected and are included among the deaths. All severe reactions and deaths following the inoculation of virus, whatever the cause, have been recorded against the vaccine. A "moderate" reaction signified that an animal showed inappetence for one to three days, and may or may not have shown a slight loss of condition, but made a rapid recovery that was complete by the fourteenth day. A "severe" reaction signified that an animal showed inappetence, diarrhoea and a considerable loss of condition.

EXPERIMENT No. 1

To compare the degree and duration of immunity conferred by vaccination on the progeny of crystal violet vaccinated sows (1) before weaning and (2) after weaning. There does not appear to be any information in the literature of the subject on this important point. The consensus of opinion in America is that the serum-virus method of immunisation, which is widely and successfully used there, does not usually confer a durable immunity on unweaned pigs, the progeny of serum-virus immunised sows; vaccination is therefore generally deferred until about fourteen days after weaning.

The position in Great Britain is different from that obtaining in America, as no method of active immunisation has been practised here and the majority of breeding sows are susceptible to swine fever; it is difficult to estimate the number of breeding animals that may have survived field outbreaks of the disease and acquired natural immunity, but the number must at any given time be relatively small. Therefore, if unweaned pigs, the progeny of crystal violet vaccinated sows, can be immunised, it will mean a gain in time of seven weeks over the procedure of vaccination after weaning and this would represent a considerable advantage in the relatively short life of fattening stock.

Plan of Experiment.—This experiment was planned to comprise 30 sows and their progeny, but as it was realised that a certain number of sows would for one reason or another be unsuitable, a total of 45 was vaccinated. A group of 18 sows on one farm had to be discarded on account of the poor quality of their litters, caused through temporary difficulties in obtaining sufficient and suitable food. Three other sows were barren. This leaves 24 sows and their progeny for consideration here. At the time of vaccination 14 sows were non-pregnant, three were one month pregnant and seven were three months pregnant. As the sows were of different ages and breeds and were kept under varying conditions of diet and hygiene, no reliable information could be obtained as to the effect of vaccination at different stages of pregnancy on their progeny, but as far as could be judged from the meagre data available, the stage of pregnancy at which a sow was vaccinated exercised no appreciable influence on the susceptibility of her progeny. Each sow was given 10 c.c. of vaccine.

A sow, to be suitable for the experiment, had to have a litter of at least seven pigs. The litter was divided into three groups: three pigs were vaccinated (5 c.c.) before weaning, when about 21 days old; three were vaccinated (5 c.c.) after weaning, at 10 weeks of age; and the remaining pig or pigs were left unvaccinated and subsequently given virus to verify the susceptibility of the litter. The litters were weaned when eight weeks old and taken in a special lorry to clean premises where they were isolated. Throughout the period of isolation a number of susceptible control pigs were kept in the pens as a means of detection of swine fever virus should it have been inadvertently introduced. The precautions taken against infection were, however, successful and the control pigs remained normal throughout the experiment. At

intervals of 13, 20 and 27 weeks after vaccination, the immunity of one pig vaccinated before weaning and one pig vaccinated after weaning, from each litter, was tested by the subcutaneous inoculation of virus. One or more susceptible pigs were included in each test to verify the potency of the virus. A summary of the results is shown in Table I and details in Table II.

Table I

Number of Pigs Vaccinated and Tested for Immunity	Remained Normal	Moderate Reaction	Severe Reaction	Died	Percentage Protected
125	96	5	2	22	80·8

Table II

Vaccinated	13 weeks Group				20 weeks Group				27 weeks Group			
	Number Tested	Died	Protected		Number Tested	Died	Protected		Number Tested	Died	Protected	
			Number	Percentage			Number	Percentage			Number	Percentage
Before weaning ..	25	7	18	72·0	23	3	20	86·9	18	3	15	83·3
After weaning ..	22	3	19	86·3	20	4	16	80·0	17	4	13	76·4

Percentage protected *before* weaning = 80·3; percentage protected *after* weaning = 81·3.

It will be seen from Table II that the lowest percentage of animals protected occurred in the 13-week group vaccinated before weaning, although immunity in this group might reasonably have been expected to be stronger than in the later groups tested. Some of the deaths in this group were caused by a recrudescence of secondary bacterial infection under the stimulus of the virus inoculation. It is generally recognised that the risk of reactivating latent bacterial infections in the pig diminishes with the passage of time. This is shown here by the higher percentage of pigs, vaccinated before weaning, protected at 20 and 27 weeks than at 13 weeks. The results have probably been influenced to some extent by the varying conditions of diet and hygiene of the sows during pregnancy and during the critical early weeks after farrowing. These conditions varied from herd to herd; in some herds they were excellent and in others they were bad; these variations were reflected in the health and weight of the litters as they were received at the Laboratory. Unfortunately, many of the sows belonged to owners who were mainly dependent on purchased food. As time passed, the food situation became increasingly difficult and it was clear that some of the pregnant sows were not receiving sufficient nourishment; to counteract this the Ministry arranged for owners to be given extra coupons for meal at the rate of 5 lb. daily for each sow. In spite of this supplementary ration, some litters were weak and undersized when weaned at eight weeks of age. The effect of early and sudden weaning on these unthrifty pigs was aggravated on arrival at the Laboratory by a diet unsuitable for young pigs, but unavoidable under war-time conditions, and 43 died from secondary bacterial infections, before their immunity test was due. A considerable number of other pigs were infected, but eventually recovered. In the light of later experience it would have been better if these apparently recovered pigs had been discarded from the experiment as the subsequent inoculation of virus reactivated the latent bacterial infections and caused some deaths from pneumonia.

Virus Control Pigs.—Twenty-nine control pigs were inoculated with virus and 28 (96·5 per cent.) of these died. One control pig remained normal when given virus, but two vaccinated pigs from the same litter died when tested for immunity, thereby verifying the absence of natural immunity in the litter. The control pigs of three litters died of secondary bacterial infections while in isolation and before the inoculation of virus had been carried out. As vaccinated pigs died in two of these litters the absence of a control was not of importance. In the third litter the vaccinated pigs remained normal when tested for immunity; there was, however, no history of swine fever in the herd and the progeny of two other sows on the same premises were proved to be susceptible.

Experiments Nos. II and III

These experiments were to determine the degree and duration of immunity conferred by vaccination (*a*) before weaning and (*b*) after weaning on pigs in different types of commercial herds maintained under average farming conditions. It was hoped that the experiments would provide also an indication of the results that might be anticipated when the vaccine was used in the field on herds affected in varying degrees with parasitic and secondary bacterial infections.

Plan of Experiments.—Experiment No. II was carried out in breeding-rearing herds; and Experiment III in breeding-rearing herds to which in addition purchased store pigs were from time to time introduced. The herds taking part in the trial were situated in the counties of Norfolk, Suffolk, Cambridge, Essex, Kent, Sussex and Herts.

Each herd was examined before vaccination by a Divisional Inspector of the Animal Health Division. If a herd appeared healthy and there was no recent history of contagious disease, it was provisionally accepted for the trial. A second examination was made 14 days later and if the animals were normal vaccination was carried out. Pigs weighing up to 70 lb. received 5 c.c. of vaccine subcutaneously while those over 70 lb. were given a 10 c.c. dose. It was planned to vaccinate 80 per cent. of the pigs in each herd and to leave 20 per cent. unvaccinated to verify the safety of the vaccine; the final figures show that rather more than 20 per cent. were left untreated. The vaccinated pigs were tattooed in the right ear with either the letter "A" or "D", depending on whether they were treated before or after weaning. The control pigs were tattooed with the letter "C" in the left ear.

At intervals of three, six and nine months after vaccination in Experiment No. II and at three and six months only in Experiment III, a group of pigs, consisting of five vaccinated and one control, was bought from each herd on an agreed valuation between the owner and the Divisional Inspector. These pigs were collected from the farms and taken to the Laboratory in a lorry reserved for this purpose. This procedure was considered advisable so as to eliminate the risk of the vaccinated pigs coming in contact with swine fever virus, as might occur if they were carried in railway trucks or in hired motor transport, thus reinforcing the vaccinal immunity and giving a false impression of the efficacy of the vaccine. On arrival at Weybridge the pigs were isolated for a period of not less than seven days on clean premises, so that they could recover from the effects of the journey and become accustomed to a new diet. The majority of the pigs received from the field were in fair condition. Two groups from the same herd, vaccinated before weaning, were clinically affected with necrotic enteritis (*S. cholerae-suis*); as they had been sent to the Laboratory, they were tested for immunity, but their unthrifty condition rendered them useless for the purpose of the trial; four out of the ten vaccinated animals died and are included in the Tables. Two other groups were heavily infested with worms and were in poor condition, but they stood up well to the virus inoculation.

During spells of warm weather, with a high relative humidity, in the months of June and July, swine erysipelas occurred among heavy pigs in five separate groups. The disease was observed in three groups shortly after arrival at the isolation farm and before they were inoculated with virus; one pig died and two were sick but recovered; the affected and in contacts were treated with serum. Five pigs became affected with erysipelas after they had been inoculated with virus; two died and one moderately affected animal was shot to prevent the further dissemination of infection. One pig (7953) that died from erysipelas after the inoculation of virus, was first affected while on the isolation farm and was there treated with serum. It did not apparently make a complete recovery and the reaction subsequently elicited by the virus reactivated the infection which caused the death of the animal. The deaths caused by erysipelas are included in Tables IV and V.

Herds in Experiments II and III.—Experiments II and III together comprised 24 herds containing a total of 2,503 pigs; of these 1,797 were vaccinated and 706 (28 per cent.) were left as controls. As there was no appreciable difference in the results obtained in the two experiments it is proposed to consider them together.

Table III shows details of the herds:—

Table III

Experiment Number	Number of Herds	Total Number of Pigs in Herds	Weaned Pigs		Unweaned Pigs	
			Vaccinated	Controls	Vaccinated	Controls
II	15	1,918	1,011	442	346	119
III	9	585	407	138	33	7

Immunity Tests

Two sets of premises, one at the Laboratory and the other on a nearby estate, were used for carrying out the immunity tests. After the short rest period on the isolation farm the pigs, vaccinated and controls, were taken to a test centre and inoculated subcutaneously with virus. Moving pigs considerable distances, especially during hot weather and subjecting them to sudden changes in diet and housing, in addition to inoculating them with a virulent virus, provided a severe test of immunity. Furthermore, the new diet that they were given was probably in most cases less varied and less nutritious than that to which they had been accustomed and many animals were a considerable time before they would eat it.

A summary of the results is shown in Table IV and details in Table V.

Table IV

Number of Pigs Tested for Immunity	Remained Normal	Moderate Reaction	Severe Reaction	Died	Percentage Protected
264	221	13	4	26	88·6

Table V

Vaccinated	3 months Group				6 months Group				9 months Group			
	Number Tested	Died	Protected		Number Tested	Died	Protected		Number Tested	Died	Protected	
			Number	Percentage			Number	Percentage			Number	Percentage
Before weaning ..	16	2	14	87·5	29	7	22	75·8	24	5	17	70·8
After weaning ..	103	7	96	83·4	74	6	68	91·8	18	1	17	94·4

It will be seen that 264 pigs were tested for immunity at intervals varying from three to nine months after vaccination; 69 pigs were vaccinated before weaning and 195 after weaning. Of the pigs vaccinated before weaning 76·8 per cent. were protected as against 92·8 per cent. after weaning.

Virus Control Pigs.—Fifty-two virus control pigs were used in Experiments II and III and 50 (96 per cent.) of these died. In one case the control pig of a three-month group failed to die, but the control in the six-month group from the same herd proved susceptible. In the second instance the control pig of a three-months group proved susceptible whereas the control pig of the six-month group resisted infection. In view of previous and subsequent experiences with these viruses and the difficulties that were encountered in the field through shortage of labour in carrying out the inoculations and ear-marking the pigs, it is possible that the controls which failed to die had been vaccinated and were marked in error with the letter "C."

Experiment V

This experiment was carried out to verify earlier results that the vaccine conferred protection against swine fever virus of English origin (selected American strains of virus, because of their great virulence, were used in our experimental work). Seven groups of pigs, each group consisting of five vaccinated and five controls, were sent from the Institute to natural outbreaks of the disease in commercial herds and put in contact with infected stock; it was arranged that each group should be put in contact with not less than seven infected pigs. One group had to be discarded as the swine fever in the herd to which it was sent was complicated with purulent pneumonia against which the vaccine could not confer protection. Three of the vaccinated pigs of this group died. Swine fever virus was isolated from one of the farm pigs and tested on vaccinated pigs at the Laboratory. The vaccinated pigs remained normal. In the other six groups all the vaccinated pigs remained normal, while 19 out of 29 (65·5 per cent.) of the unvaccinated pigs died and the remainder became sick (see Table VI). The vaccine has now been tested against 31 English strains of virus and has protected against all of them.

Table VI

Number of Vaccinated Pigs	Result	Number of Control Pigs	Results
5	Remained normal	5	Two died; three sick and recovered
5	" "	5	One died; four sick
5	" "	5	Three died; two sick
6	" "	5	Four died; one sick
5	" "	4	Four died
5	" "	5	Five died

This table shows the results on the 28th day of contact when the tests were discontinued.

Safety of the Vaccine

The fact that 2,322 pigs of all ages were vaccinated in 35 herds without incident confirms the safety of the vaccine; and the presence in the same herds of 861 unvaccinated control pigs is evidence, additional to that already published (McBryde and Cole (1936) and Doyle (1942)) that there is apparently no danger of the vaccine regaining virulence during animal passage.

Swine Fever in Vaccinated Herds

Two outbreaks of swine fever occurred in vaccinated herds taking part in the trial. In one herd the disease appeared among swill-fed, unvaccinated pigs, three months after vaccination of the original stock. At the time of the outbreak there were only six vaccinated pigs remaining on the premises out of a total of 114; the vaccinated stock having in the normal routine been sold for slaughter. The six pigs, which had been vaccinated five months previously, with one control, were put in contact with nine swine fever infected pigs. The nine naturally infected animals died during the course of the following 15 days. The control pig died on the 11th day after exposure to infection. One vaccinated pig showed symptoms of swine fever on the seventh day of contact and died on the 15th day. The Divisional Inspector reported that this pig would probably have recovered if pneumonia had not intervened. Three other vaccinated pigs showed slight reactions and two remained normal.

The second outbreak was diagnosed in a swill-fed herd 13 days after vaccination, when the owner reported a pig dead. A *post-mortem* examination made by the Divisional Inspector revealed lesions that were not diagnostic of swine fever, although suggestive of the disease. A biological test made at the Laboratory with material from the outbreak confirmed the presence of swine fever virus. The pig that died must have been infected for at least eight to ten days; that would mean that it contracted infection three to five days after vaccination. This would have been possible as it is known that the immunity conferred by the vaccine requires at least 12 days to become established.

The Divisional Inspector was of the opinion that infection had been introduced with swill, because:—

(1) Sixteen unvaccinated store pigs, which had not been fed swill, were unaffected;

(2) Three of 17 unvaccinated pigs that had been fed swill became infected.

The brew of vaccine (No. 9) used on this herd was tested on pigs at the Laboratory before it was issued and was used also on nine litters in Experiment No. I without incident.

Discussion

It is generally recognised that under war-time conditions the diet and hygiene of pigs are on most farms of a lower standard than those obtaining in normal times, and there can be little doubt that this has contributed to the severity of the trial to which the vaccine has been submitted. It applies especially to young pigs as during the early critical stage of life they require a balanced diet which in our experience has been difficult to provide under existing conditions. The heavy losses that occurred in Experiment I from secondary bacterial infections were provoked by lowered resistance caused by dietary deficiencies in both sows and litters. American experience with the serum-virus method of immunisation, is that the unthrifty animal, whether as the result of secondary bacterial infection, worm infestation or malnutrition, has an increased susceptibility [or a lowered resistance] to swine fever virus. As crystal violet vaccine causes no systemic reaction, it can be safely used on unthrifty young pigs, but should such

pigs come in contact with swine fever virus during the following few months, a small mortality may occur from a recrudescence of latent bacterial infections. It is generally accepted that the serum-virus method cannot be depended on to confer a durable immunity on unweaned pigs, the progeny of serum-virus immunised sows. It is of interest in this connection to point out that Croveri (1919) working on cattle plague in Somaliland reported that it was difficult to immunise unweaned calves, the progeny of immune cows, by the serum-virus method. Rabagliati (1924) in Egypt confirmed this finding. Observations recently reported from India suggest that this applies also to unweaned calves, the progeny of cows immunised against cattle plague with Edwards' "goat" virus. Experiment I was framed to determine whether unweaned pigs, the progeny of crystal violet vaccinated sows, can be adequately protected. The results show that this can be successfully accomplished. In the combined experiment II and III there was however a considerable margin in favour of vaccination after weaning, but the conditions there did not permit of a true comparison between the two periods. It is probable that vaccination after weaning confers the longer immunity, but it entails an absence of protection for about seven weeks during early life. Viewing the three experiments as a whole and taking into consideration the relevant facts, it would appear that the advantages to be derived from vaccination before weaning are greater than those after weaning and it is believed that if this is made a routine procedure, it will prove economically sound. In considering the results of the field trial and the part that vaccination is likely to take in the future control of swine fever, certain points might be mentioned. For example, although the pigs in Experiments II and III were bred and reared under farm conditions, the method adopted in testing their immunity was necessarily artificial and was deliberately made severe. In order to assess the protective value of the vaccine it was essential to inoculate each pig with virus; and the test viruses used were of exceptional virulence as shown by the high mortality among the control pigs. If, however, swine fever were introduced into a vaccinated herd in the field, it would appear reasonable to suggest that at the worst only a small number of pigs would contract the disease, the mortality would be small and the degree of infection greatly reduced compared with that normally present during a natural outbreak among susceptible pigs. In determining the immunity of each animal by artificial infection, the number that prove to be adequately protected is obviously of cardinal importance, yet it should not be overlooked that under field conditions the reduction in the degree of infection in a herd brought about by vaccination, and the consequent reduction in the number of animals exposed to infective doses, has a considerable bearing on the morbidity and mortality rates.

It is essential to bear in mind the limitations of the vaccine, as otherwise it may become discredited through misuse. It must be emphasised that it has no curative action; once an animal has contracted infection the vaccine is powerless to alter the course of the disease. It is solely a method of prevention for use on swine fever-free herds as an insurance against the introduction of the disease. It confers protection only against swine fever and possibly then only when used on normal animals. It cannot be expected to afford maximum protection to young pigs clinically affected with any of the commonly occurring diseases (*e.g.*, necrotic enteritis, anaemia or influenza) or to the victims of dietary deficiencies or bad management. Furthermore, deaths occurring within 30 days of vaccination are not necessarily the result of failure of the vaccine, as the incubation period of swine fever may occasionally extend to 30 days.

In view of the good results obtained with the vaccine under both laboratory and field conditions, its general use would now appear to be justified. We believe that when it is properly prepared and is used under suitable conditions, it will reduce the financial losses caused by swine fever and prove a valuable method for the control of the disease.

Acknowledgments

To Mr. J. M. Penhale, M.R.C.V.S., for his advice on problems that arose in the course of the experiments.

To Mr. J. C. Buxton, M.R.C.V.S., for his assistance in part of this work.

To Mr. E. C. Wright for assistance in preparation of the vaccine.

To the Staff of the Animal Health Division, Ministry of Agriculture, in Bucks, Cambridge, Essex, Herts, Kent, Norfolk, Suffolk, Sussex and Warwick.

References

Cole, C. G., and McBryde, C. N. (1941.) *J. Amer. vet. med. Ass.* **98.** 454-457.
Croveri, P. (1919.) *Bull. Soc. Path. exot.* **12.** 65-71.
Doyle, T. M. (1942.) *Vet. J.* **98.** 51.
Matthews, H. T., and Doyle, T. M. (1943.) *J. comp. Path.* **53.** 121-129.
McBryde, C. N., and Cole, C. G. (1936.) *J. Amer. vet. med. Ass.* **89.** 652-663.
Rabagliati, D. S. (1924.) *J. comp. Path.* **37** 1-18.

The New Principal of Glasgow Veterinary College

CAPTAIN DONALD CAMPBELL, OF RUTHERGLEN

An Appreciation

By

J. W. McINTOSH, M.R.C.V.S., F.R.S.E.

Congratulations will be extended to the Board of Management of the Glasgow Veterinary College on the wisdom of their choice in inviting Captain Donald Campbell, of Rutherglen, to undertake the duties and responsibilities of the Principalship in succession to the late Dr. Whitehouse, which invitation, as announced in your last issue, he has graciously accepted. It will be readily realised that it could be no easy decision for the new Principal to switch over from an old-established and lucrative practice to the academic side of our profession, and especially so at an age when most people are inclined to "ease off." It is sufficient proof—if proof were needed—of his great zeal and mental energy and we are confident that he will bring to his high office, in abundant measure, those qualities which make for success and that, with his ripe experience—perfected no doubt as the years rolled on—he will not only maintain the dignity of his position, but by his wise counsel and guidance promote and safeguard all those many interests associated with it.

The new Principal qualified in Glasgow in 1908, was assistant to an uncle in Rutherglen from 1908 until 1921, with four years off for service in the R.A.V.C., 9th (Scottish Division), during the last war, and has been in practice in Rutherglen since 1922 to the present time. President of the Society of Veterinary Practitioners 1936-37, and President of the N.V.M.A. 1937-38. Captain Campbell has been R.C.V.S. Examiner in Medicine from 1939 to the present year, Interim Principal Glasgow College June to July 27th, 1944, and from the latter date Principal. Born and reared in an atmosphere of agriculture and animal life, he had the best possible upbringing for a veterinary career and no better background could be had for its foundation and development. On the reconstruction of the "National" some 20 years ago Campbell's activities in our professional life began to make themselves felt, and it was not long before he was marked down for prominence in the work of the Association. It is perhaps through the operations of the "National" that he is best known to the profession—at any rate in the South. His year as President was one of the most momentous in the history of the Association, when many far-reaching and difficult problems had to be discussed and solved, and it will be generally admitted that his leadership during this time was characterised by prudence, wise counsel and guidance, a width of vision tempered by a strong vein of common sense and always with a sincere desire to solve difficulties, to promote harmony and to maintain for the profession its rightful place in the counsels of the nation, when matters affecting animal health and animal wealth were being considered.

To all of us who have enjoyed the close association of the new Principal in the common task of professional life as well as in the higher spheres of administrative policy, his great qualities of head and heart have endeared him.

In the more immediate sphere of his professional activities and in his home life he is held in the highest esteem, not only for his intellectual gifts, but as a loyal friend, a great gentleman and a man of sterling integrity.

He carries with him the best wishes of the profession in his new and responsible task.

Weekly Wisdom

"*Whoever is to acquire a competent knowledge of medicine ought to be possessed of the following advantages: a natural disposition; instruction; a favourable position for the study; early tuition; love of labour; leisure. First of all, a natural talent is required, for when nature opposes, everything else is in vain; but when nature leads the way to what is most excellent, instruction in the art takes place, which the student must try to appropriate to himself by reflection, becoming an early pupil in a place well adapted for instruction. He must also bring to the task a love of labour and perseverance, so that the instruction taking root may bring forth proper and abundant fruits.*"—Hippocrates, 460-375. B.C.

CLINICAL COMMUNICATION

"Cetavlon" (Cetyltrimethylammonium Bromide) in Small-Animal Practice*

J. S. J. LAUDER, M.R.C.V.S., AND MISS D. STEPHENSON, M.R.C.V.S.,
ALTRINCHAM, CHESHIRE

Since 'Cetavlon' is now being advertised in the veterinary press we thought it might prove of interest to mention some of the purposes for which we have found it useful during the last few months. Reports have appeared in the medical press from time to time (Barnes, 1942; Williams *et al.*, 1943; Forman, 1943; Williams *et al.*, 1944), indicating its wide use in the human subject for sterilisation of the hands of the surgeon and the skin of the patient prior to operation. In addition it has been extensively used in skin diseases, in cleansing of wounds and in burns.

'Cetavlon' consists essentially of cetyltrimethylammonium bromide. It occurs as a bulky white powder, readily soluble in hot water to produce a solution neutral or faintly alkaline to litmus.

Practically all the bacteria pathogenic to animals are claimed to be killed by a 1 per cent. solution of 'Cetavlon.' The common pyogenic bacteria and anaerobes are killed by dilutions up to 1:100,000.

The following are some of the veterinary uses of 'Cetavlon' which we have explored.

1. *Surgical*:

We adopted 'Cetavlon' for our preoperative sterilisation technique, at first as a 1 per cent. solution but this was later changed to a 5 per cent. solution. The general technique used was as follows: The operation site was shaved with razor and soap; the soap was then thoroughly washed off with water and 'Cetavlon' solution was used to remove all the surface grease and dirt as well as having excellent bactericidal action. The hands of the operator were thoroughly scrubbed with a 5 per cent. solution. The operations for which this technique was used included amputation of digit, spaying of kittens, Caesarian section in the bitch, aural resection, tumour section, hysterectomy, cystotomy. A 1 per cent. solution was used as a daily dressing of the wounds with first intention healing resulting.

Instruments were also sterilised by 'Cetavlon' but, in addition to causing rusting which can be overcome, it has the disadvantage of making the instruments slippery to handle.

2. *Otitis*:

The excellent cleansing properties of this preparation led us to try its effect in suppurative and catarrhal otitis. The ears were thoroughly cleaned with a 5 per cent. solution and daily use by the client of a 1 per cent. solution cleared up most cases in 10 to 14 days, whether permanently or not remains to be seen. One particularly stubborn case of suppurative otitis may be cited here. The subject was a 6-years-old Dalmatian dog which had had a persistent suppurative canker of the ears for about 12 months. This could be kept in check by the daily use of hydrogen peroxide and acriflavine but would not clear up. The dog was duly treated with 'Cetavlon' (5 per cent.); the ears were perfectly clean after three weeks' treatment and have so far remained so after seven weeks without further treatment.

3. *Bacterial Necrosis*:

'Cetavlon' has been used in four cases of "canker" of the mouth in spaniels with complete cures in each case.

4. *Skin Conditions*:

Due to its property of removing grease, 'Cetavlon' has been used successfully in the removal of ointments, etc., from the skin, and has also cleared up a few cases of moist eczema.

5. *Abscesses*:

Latterly we have used the 5 per cent. solution to good effect for syringing out abscess cavities, its property of foaming on manipulation of the overlying tissues assisting in the cleansing of the depths of the cavity. Following its use there was a rapid reduction in the rate of pus formation and the production of healthy granulation tissue with quick healing.

One case may prove of interest to readers, where as the result of a road accident, injury to the jugular vein of a dog occurred, with the production of an enormous swelling filled with blood in the region of the brisket. Absorption of this fluid continued for four days when the temperature suddenly rose to 106° F. and the area became hot and painful. On the sixth day the swelling was opened at its lowest point and a large quantity of pus released, leaving a very large cavity. For the next four days the abscess cavity was syringed with 'Cetavlon,' by which time the opening had almost closed. On the eleventh day a quantity of the solution was injected and left in the cavity while the wound was allowed to heal. There were no further complications and the cavity apparently remained reasonably sterile while granulation tissue gradually obliterated it.

6. *Wounds*:

The preparation has proved a useful agent for cleaning wounds which have resulted from road accidents, particularly those which were contaminated with grease and tar.

CONCLUSIONS:

'Cetavlon,' in so far as we have used it, has proved to be a cleansing agent of high efficiency which possesses, in addition, excellent bactericidal properties. It has proved useful for preoperative sterilisation but is incompatible with soap. So far we have only used it in connection with small-animal practice but practitioners will readily realise its possible application to the larger animals. At the moment its application to "grease" in horses' legs is being tried out.

Acknowledgments.—We are indebted to Imperial Chemical (Pharmaceuticals) Ltd., Manchester, who kindly supplied us with material for these trials and also to D. D. Ogilvie, B.SC., M.R.C.V.S., of that firm, for his help and suggestions.

REFERENCES

BARNES, J. M. (1942.) *Lancet*, May 2, p. 531.
WILLIAMS, R., CLAYTON COOPER, B., DUNCAN, J. MCK., MILES, E. M. (1943.) *Ibid.*, April 24, p. 522.
FORMAN, L. (1943.) *Ibid.* Aug. 7. p. 174.
WILLIAMS, R., CLAYTON COOPER, B., FAULKNER, H. C., and THOMAS, H. E. (1944.) *Ibid.* June 17. p. 787.

* Since this paper was submitted for publication we have been advised by Imperial Chemical (Pharmaceuticals), Ltd., that by Government direction the whole of their production of 'Cetavlon' for the remainder of 1944 has been reserved for Service and Hospital use. Some stocks may still remain in the hands of certain wholesalers and veterinary supply houses. We understand that the manufacturers will make an appropriate announcement when supplies of 'Cetavlon' again become freely available to the veterinary profession.

ABSTRACTS

[Physiological and Histological Changes in the Vagina of the Cow During the Oestral Cycle. BROWN, P. C. (1944.) *Amer. J. vet. Res.* **5.** 99.]

After an informative review of the literature, the author describes the results of 400 examinations made of 38 different cows.

(i) Degree of vascularity of the mucous membrane of the vagina and cervix. This was noted immediately after inserting a speculum, and was observed to be most marked during oestrus, diminishing rapidly so that the mucosa appeared pale by three to five days after heat. Marked hyperaemia was noted again during the period of 24 to 36 hours prior to oestrus.

(ii) Cervical tone. This was estimated by noting the number of fingers that could be introduced into the external os. During the inter-oestral period, it was not usually possible to push the little finger into the outer annular ring, but four to six days before oestrus one finger could be introduced, and at full oestrus, two fingers. The return to the inter-oestral condition took one to five days, except in two cases with slight metritis, in which the cervix remained slightly relaxed throughout the inter-oestral period.

(iii) Tone of uterine muscle, as judged by rectal palpation. During oestrus, the uterus was somewhat enlarged, softened, and oedematous. The firm contracted state was reached within three to five days post-oestrus, being gradually changed during the two or three days before the next oestrus.

(iv) Vaginal secretions. These began to accumulate 24 hours before oestrus, reached their maximum amount and fluidity during oestrus, and were practically absent from about three to five days post-oestrus. It was noted that samples of secretions removed from the vagina with aseptic precautions, and kept in clean but not sterilised containers, showed no apparent change for as long as 18 months at 4° C., or 60 days at room temperature.

(v) *p*H of vagina. This was determined *in vivo* with a Beckman *p*H meter using glass electrodes at two sites, one ventral and one dorsal to the external os. The highest *p*H reading obtained was 8·3, the lowest 6·2; 86·36 per cent. of the readings lay between 6·50 and 7·49, 48·33 per cent. below 7·0, and 23·05 per cent. between 6·90 and 7·09. There was little variation of *p*H during the oestral cycle, but a slight tendency was present for the *p*H reading to decline at oestrus.

(vi) Vaginal epithelium. Tissue was obtained by biopsy from the wall of the anterior vagina where it blended with the external os, fixed in bouin, dehydrated in ethyl and butyl alcohol, embedded in paraffin, sectioned at about 10 *u*, and stained with Harris's haematoxylin and orange G. The superficial layer of the epithelium is composed of columnar mucus-secreting cells. Below this layer, the epithelium is of stratified squamous type. During oestrus, the cells of the superficial layer reach their greatest height, and are usually

greatly distended with mucin. At this time, the number of layers of squamous type cells is least, but the total thickness of the epithelium is greatest. One day after oestrus, the columnar cells begin to diminish in height, while the number of layers of squamous cells increase. Two days after oestrus, the superficial layer of cells are still further reduced in height to a cuboidal or polygonal shape; the number of layers of stratified squamous cells reaches a maximum. From then on, the superficial layer varies from low columnar to polyhedral in shape, and the number of layers of squamous cells decreases gradually to the minimum, the average number of layers at oestrus being two to four. Leucocytic invasion of the subepithelial layers seldom occurs during oestrus, and reaches a maximum two to five days after oestrus. After parturition, the epithelium is comparable to that of the dioestral stage.

(vii) Rectal palpation. Ovulation was noted to occur 24 to 36 hours after the onset of oestrus. Corpora lutea could be detected as early as three days post-oestrus, and reached their maximum size ten days post-oestrus; little change was noted from the 10th to the 17th day, but by the time of the next oestrus, the corpora were only one-third to one-fourth of their maximum size. Regression after this sudden decline was much slower.

(viii) Abnormal conditions. Cystic ovaries, persistent corpora lutea, retained placenta, metritis, or other pathological conditions encountered did not affect the constancy of *p*H values of the vagina to any degree. E. C.

* * * * *

[The Embryology of the Calf: Foetal Growth Weights, Relative Age and Certain Body Measurements. Nicols, C. W. (1944.) *Amer. J. vet. Res.* **5**. 135.]

Figures are given of measurements and weights of 101 foetuses with crown-rump lengths varying from 22–680 mm. Ages of representative specimens were estimated by using the age crown-rump weight relationship established by Winters *et al.* (1942)*, and comparisons were made with findings of earlier investigators. Other body dimensions selected were sternal notch—pubis, occipito—frontal diameter, and horizontal and dorso-ventral diameter both at umbilical level; these were suitable for determining the regional growth of the body in relation to C.R. length. The apparatus used for measuring all except small embryos is illustrated. It consists of a flat metal table flanked by two fixed planes. Two movable planes attached to horizontal and vertical metric scales are used for making the actual measurements.

C. W. O.

* Winters, L. M., Green, W. W., and Comstock, R.E.: Prenatal Development of the Bovine. *Univ. Minn. Agric. Exper. Sta. Tech. Bul.*, **151** (June, 1942) 50.

* * * * *

[A Search for Endemic Areas of Trichinosis in Great Britain. Taylor, E. L. (1944.) *Nature*. **153**. 745-746. (In "Letters to the Editors," issue of June 17th, 1944.).]

Taylor points out that although the life history of *Trichinella spiralis* has been known for about a century our knowledge of the epidemiology of trichinosis is still scanty. Since about 1937, researches in the U.S.A. and in Great Britain have shown that the incidence of sub-clinical human infestation in these countries is relatively high. The outbreaks of clinical trichinosis at Wolverhampton, Penrith and Harpenden during the winter of 1940–41 emphasised the necessity of discovering the origin of infection. The explanation, made in the past, that outbreaks of the disease in Great Britain were supposed to result from imported trichinosed pork, which had occasionally eluded the meat inspection barrier, now appears to be inadequate, and Taylor thinks it more than likely that reservoirs of infection exist amongst animals in this country. Because the general incidence of infection in rats throughout Britain appears to be very low, notwithstanding the fact that parasitised rats were found at centres where trichinosis had been diagnosed in man, Taylor considered that the examination of carcases of rat-eating animals might be more likely to produce a result as their skeletal muscles would show evidence of trichinosed flesh having been eaten at any time during their whole lives. Pest officers, in various counties, secured for this purpose 636 stoats, 78 weasels, and two polecats, the muscles of which were thoroughly examined microscopically by means of crush preparations and after peptic digestion. No *Trichinella* larvae were found in any of the 716 carcases. Although the geographical distribution of the animals examined was uneven (the numbers from the various counties are stated) and no stoats or weasels were secured from any of the regions in which trichinosis had recently appeared in man, it is considered that the findings are a useful indication of the sparse distribution of *Trichinella* throughout England and suggest that reservoirs of infection are confined to a few relatively small areas.

J. N. O.

[Snake Bite in England. Luckham, H. de C. (1944.) *Vet. J.* **100**. 68-69.]

The adder is the more common of two species of poisonous snakes found in heath country of southern England, while the smooth snake or Coronella occurs in the New Forest and in Dorset. Luckham states that dogs are most frequently bitten, and also records cases of snake bite in horses, cattle, sheep and pigs. (Sites of injury in dogs are usually about the head, neck or fore legs. Generally dogs, when bitten, start suddenly, cry out and appear frightened. In about ten minutes swelling at site of the two punctures, about one-quarter of an inch apart, occurs and extends towards the heart, signs of tenderness being first noted. Loss of consciousness, collapse, coma and death follow, apparently from heart failure. Pain is less marked if the swelling is extensive.) Luckham mentions the loss of two dogs from heart failure about a year after snake bite and recalls the old country saying "pain will be felt at the site of the wound on anniversary." Recommended treatment follows the usual lines, and the author includes coramine as a heart stimulant and aspirin to relieve pain.

In cattle a hard residual swelling is said to persist for life at the point of injury. Three cases, in which bites were near the milk vein, were more serious than usual and details are given. Luckham cites the record of sudden death of a cow after swallowing an adder (found alive in its rumen on examination), also bites on the udder of sheep and the scrotum of a ram, which died. He does not remark about his pig cases. C. V. W.

REVIEW

[Animal Breeding Plans. (Second Edition.) By J. L. Lush. Published by Iowa State College Press, Ames, Iowa, U.S.A. Price $3.50.]

This is not an easy book to review. It would still be difficult were there no considerations of stringency of space and paper to set a limit. These considerations, however, obtain and the task is made more difficult.

Professor Jay Lush has an established position in the science of animal genetics and the issue of the second edition of his book will be welcomed by those interested in animal breeding in this country as well as in the U.S.A. The present edition incorporates the advances which have been made during the past six years and there is probably no other book to which the advanced student could better turn for information upon current genetic theory and its application to animal genetics. It should perhaps be emphasised that this is not a book for the beginner, nor perhaps for the majority of those who practise animal breeding; but for those who control or direct animal breeding policy, for the teacher in the veterinary or agricultural college, and for the post-graduate or specialist student, it is, we feel, indispensable.

Perhaps the most striking characteristic of the book to remain in the reader's mind will be the increasing emphasis upon the importance of the family and the population rather than upon the individual. Knowledge of farm animal genetics must perforce be accumulated slowly (because of the time factor and because of the relatively small numbers of offspring from individuals), but principles discovered in experimental work with smaller, cheaper and more rapidly reproducing material, are gradually being found to have the same or very similar applications to farm livestock. Much more now is known concerning the methods by which constant selection changes the genetic composition of populations, and what are the outward results; these aspects are carefully considered and the usefulness as well as the limitations of various bases of selection are discussed.

It is becoming more obvious, viewing the subject of animal genetics in perspective, that the characters in inheritance that have hitherto seemed too complex for practical manipulation in breeding of farm stock (*e.g.*, the complex of milk-inheritance) are slowly yielding to genetic analysis. It seems that the time may come when judgment of excellence will have to take far more cognisance of the genetic constitution of the animal and its ancestry, rather than depend mainly upon superficial outward appearance, often greatly changed by the man who "dressed and brought the animal out."

Balanced judgments upon many of the disputed views and beliefs held by breeders and others are given; in each, the arguments for and against are set out, and wherever possible appeal to genetic truth enables the reader to form a correct decision applicable to his own particular circumstances or problems.

The reviewer's difficulties have been stated: it is impossible to appreciate the immense amount of information within the 430 pages of this book other than by reading it carefully. Those whose interests lie in this increasingly important field of knowledge will be well advised to do so.

Questions and Answers

"Questions and Answers" will be published on alternate weeks.
The submission of questions for inclusion in this column will be welcomed. They can relate to any aspect of veterinary work and where publication of the name of the enquirer is not desired, a pseudonym should be supplied, the name and address also being given.
Answers to readers' queries represent exclusively the personal opinions of the writers, and criticism of the replies will be appreciated.
All communications should be addressed to the Editor.

Restraint when Docking a Foal

Q.—*What is the best method of restraint for docking a foal?*—"*Stud.*"

A.—It is advisable in the first place to point out that this question should have been asked in a slightly modified form, namely: "What is the best method of restraint for inserting a local anaesthetic before docking a foal?" For, according to the Anaesthetics Act, 1919, it is illegal to dock a horse unless this be done; no exception is made on account of age.

It is highly probable that docking is more frequently practised at studs or farms where numerous pedigree or, at least, high-class animals are bred, and so where the foals receive a certain amount of handling from birth; or in any case where there are those very used to the handling and holding of animals. It would probably be advisable, and possibly tactful, to leave the holding and restraining of the foal in the hands of these latter to employ the particular method they are used to or favour, unless (?) the operator has that confidence in his own method that he knows he is in a position to teach. In such a case he will find that these hard-headed practical men are only too willing to learn something that they did not already know.

If a foal has been handled very little vigorous restraint is necessary, and even if it has not, no actions simulating a "rodeo" performance should be indulged in: no rushing about, no shouting and no unnecessary pulling. The foal must have on a halter, or headstall with shank, held by two men; one may be sufficient for a well handled foal. One man should stand close in front of the foal's head and the other by its shoulder, and the foal placed with its right side close against a flat wall of a stall or loose box with no projecting posts or rails, facing a corner with no manger against which it might plunge and injure, quite seriously, a shoulder joint, or into which it might get its fore legs. A small hand twitch may be necessary, but should not be used unless it is. In the case of a very young foal, and the younger the better, a good strong man with his arms round the foal's neck probably is as good a method of holding it as any, provided someone has hold of its tail to keep it from rushing forward or backing.

The operator should stand against the left quarter, and if actually leaning against it to help in keeping the foal against the wall, is not likely to come by any serious hurt. An assistant should then grasp the hair at the end of the tail and by lightly pulling on it hold the tail in line with the back. The operator is then in a good position to decide where he wishes to cut the tail, tie up the hair above this point and inject a local anaesthetic into the dock. He may utilise the short time this will take to act in removing the hair for a width of about an inch around the dock where he proposes to sever it. The operator will, of course, have to change his position temporarily while he performs the operation, but should resume it again immediately after handing the knife to the assistant who now has the freed end of the tail. He is again in a position safely to carry out whatever procedure he himself favours for dealing with the stump.

. . . . . .

Treatment for "Husk" in Cattle

Q.—*What is the most efficacious treatment for "husk" in cattle?*—*C. T. C.*

A.—There is no efficacious anthelmintic treatment for "husk." Medicaments given by mouth have no demonstrable effect upon the parasites and the marked difference of opinion over the action of intratracheal injection shows that if any benefit is to be derived at all it can only be a slight one. Immediate removal from the infected pastures coupled with good housing and feeding, is the best recommendation that can be made at the present time.

. . . . . .

Grit for Poultry

Q.—*Do veterinary and poultry pathologists believe that limestone grit, cockle shell and oyster shell ever put shells on shell-less eggs? My experience in hundreds of* post-mortem *examinations is that they are never absorbed and only cause erosions and sometimes perforation of the gizzard and peritonitis. If lime is needed limestone flour should be used.*—*G. Mayall.*

A.—To produce 300 eggs within a year a hen has to provide about 1,500 grammes of calcium carbonate, all of which must ultimately have been supplied in the diet although the mineral reserves of the bones may be mobilised during the periods of heavy egg laying. To provide this amount of calcium it is the practice to supply calcium carbonate, usually in the form of oyster shell, limestone grit or eggshell itself. There is no doubt that the calcium contained in such "soluble grit" can be absorbed and utilised for eggshell formation. If large amounts are fed the excess will remain undissolved.

It seems unlikely that erosion and perforation of the gizzard would be caused by limestone grit or oyster shell since no such trouble is encountered with the "insoluble" siliceous grits which are provided to aid the triturating activity of the gizzard. When birds are supplied with "soluble" grit they should always have access to "insoluble" flint grit (otherwise they may eat an excessive amount of the former) so that enough is left to provide grit in the gizzard for grinding. Incidentally, there are some who do not consider that "insoluble" grit is necessary for proper functioning of the gizzard.

The problem of soft-shelled eggs is more complex than the mere supply of calcium in the diet. The calcium supplied must be absorbed and retained (influence of vitamin D), the ratio of Ca and P in the diet must be suitable, and the calcium metabolism of the portion of the reproductive tract in which the hard shell is formed must be working properly (administration of sulphanilamide causes hens to lay soft-shelled eggs due to interference with an enzyme concerned in calcium carbonate formation). There is evidence suggesting that inability to produce hard-shelled eggs may be an inherited factor in some birds even when the diet contains an adequate amount of Ca. Diseases of the oviduct or sudden fright are other factors which may cause eggs to be laid with a deficient calcareous shell. Yet another cause is over-feeding.

It does not matter in what form calcium carbonate is provided and limestone flour would thus be as effective as the more generally used materials. It appears that the Ca reserve of the bird is increased during the period before the pullet lays her first egg and so the use of a calcium supplement might be of value at this stage.

. . . . . .

Supply of (a) Protective Clothing; (b) Towels

Q.—(1) *What is the correct form of application to the Ministry for vouchers for the supply of protective clothing for veterinary surgeons?*

(2) *I wish to obtain some towels for use by my assistant and myself. To whom and in what form shall I make application?*—"*Shortage.*"

A.—(1) With reference to the arrangements which have been made to enable veterinary surgeons engaged in agricultural work to purchase coupon-free protective clothing, it will be necessary for any veterinary surgeon who wants a certificate for this purpose to furnish the Ministry (Animal Health Division, 99, Gresham Street [First Floor], London, E.C.2), with a declaration to the following effect:—

> "I, ..., a veterinary surgeon engaged in agricultural practice at....., hereby declare that I require for my own use in my agricultural practice the following articles of clothing:
> .....
> ....."

It is important in order to save time and obviate correspondence that the declarations should follow as closely as possible the wording suggested above.

As the Ministry's certificates are issued to individuals, it will not be sufficient for an employer to make an application for his veterinary assistants; each assistant should make his own application. Also each member of a firm of veterinary surgeons should make his own application since the certificates cannot be issued to firms.

Furthermore, since the certificates have to be surrendered to the traders, it is essential that applications for certificates should indicate whether more than one trader will be supplying the articles; more than one certificate will be required if more than one trader is concerned.

The articles obtainable by means of these certificates are: rubber coat, parturition overall, overall coat, rubber boots (any variety) or, if these are unobtainable, working boots, leggings.

A.—(2) Applications for towels should be addressed to the Ministry, as above.

Every application for a certificate should be made on the veterinary surgeon's headed paper and should be in the following terms:

> "I, ..., a veterinary surgeon engaged in private practice at....., hereby declare that I require for the purpose of my professional work additional towels, and I hereby undertake that any towels which I may be enabled to purchase by the certificate for which I now apply shall be used solely in connection with my professional work.
>
> I have not applied for or obtained any certificates in respect of towels from any other Government department.
>
> Date..... Signed....."

Every application for a certificate must be made by the veterinary surgeon who requires the towels. A certificate will not be issued to an employer in respect of towels required by qualified assistants or to a firm of veterinary surgeons in respect of towels required for the use of the partners of that firm.

Each certificate must, after having been endorsed by the veterinary surgeon to whom it was issued, be surrendered to the trader who supplies the towels.

The Stuck Metal Plunger

Q.—*I frequently experience trouble due to the sticking of the metal plungers in "Record" syringes. How may this be avoided, and how may stuck plungers be removed?—"Exasperated."*

A.—Sticking of the plunger in the barrel is due to the syringe being left uncleaned after use. If the syringe is cleaned every time, and the plunger separated from the barrel, there should be no further trouble. After use the syringe should be sterilised, and then placed in methylated spirits until required again, all the parts being detached one from the other.

With regard to the removal of stuck plungers, this is very difficult, and the attempt very often results in the breaking of the barrel. One method is to fasten the piston rod to a strong piece of string attached above to a firmly fixed hook, and gradually jerk it downwards, which often releases the plunger. Another method is to soak the syringe for some days in methylated spirits.

Correspondence

Optimum Time for Removal of Placenta in the Cow

Sir,—I cannot agree with the advice given in the otherwise very excellent answer to this query, in cases where abortion has occurred, for I have found that it is futile earlier than the fifth day, and very often then it is neither easy nor complete.

Where assistance has been necessary at the time of parturition and the placenta incapable of removal, the injection of stilboestrol at this stage has proved more successful than when employed later. I rarely advise removal in any case earlier than the fourth day, but am guided by the very obvious truths contained in the original reply to this question.

Albrechtsen advised removal 24 hours after parturition and discouraged uterine irrigation afterwards. I disagree with him on both these points!

Treatment of Mild but Stubborn Pyometra

Pituitrin intramuscularly in doses ranging from 10 c.c. to 20 c.c., has given more consistent results than stilboestrol (even when 80 c.c. of this in oil has been injected well into the uterus).

Entozon in strength 1 to 3,000 is preferable to iodine solutions, and is the choice *par excellence* in the mare.

Failing this, normal saline solution adding two drams of tincture of iodine to each pint.

Prevention of Post-Castration Swelling

If you use an emasculator do not select one which fails to convey the impression of a slight jerk when the blades are closed and the handles are tightly pressed together, for it will not crush the blood vessels satisfactorily, and post-operative haemorrhage will occur.

Yours faithfully,

"Rothiemurchus," J. F. D. Tutt.
St. Cross, Winchester.
August 27th, 1944

ARTIFICIAL INSEMINATION CENTRES SCHEME

Reporting on the proceedings at the first meeting of the Government's Central Advisory Committee on Artificial Insemination, *The Farmers' Weekly* states that the discussions were of a preliminary nature, owing to the failure of the Treasury to agree with the Ministry of Agriculture on the amount to be guaranteed to the Milk Board against loss of the running of the scheme for five years. It was decided, however, that the Board should set up approximately six new centres during the next 12 months.

"The chairman of the committee—the delay in his appointment had held up the progress of the scheme for some months—was the Duke of Norfolk, Joint Parliamentary Secretary to the Ministry of Agriculture. There were also present the representatives of the breed societies on the Committee. These, nominated by the National Cattle Breeders' Association, on behalf of all breeds in the country, are Mr. J. L. Cridlan, the Aberdeen-Angus breeder, of Maisemore, Gloucester: Mr. Hugh Wyllie, the Ayrshire breeder; Mrs. G. M. Strutt, of Chelmsford (Friesians); and Mr. W. J. Cumber (Shorthorns), Theale, Berks. The Ministry's representatives were Mr. Anthony Hurd, Sir Alfred Wood, Sir John Barlow, and a fourth member."

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Sept. 13th.—Meeting of the Editorial Committee, N.V.M.A., at 36, Gordon Square, W.C.1, 2.30 p.m.

Sept. 15th.—Meeting of the South Wales Division, N.V.M.A., at Llandilo (Cawdor Arms Hotel), 1.30 p.m.

Sept. 15th.—Meeting of the North Wales Division, N.V.M.A., at Neston (Veterinary Field Hospital, Leahurst), 11.30 a.m.

Sept. 20th.—Meeting of the Finance and General Purposes Committee, N.V.M.A., at 36, Gordon Square, W.C.1, at 11.30 a.m.

Sept. 20th.—Meeting of the Lancashire Division, N.V.M.A., at Preston (Booth's Café), 2.30 p.m.

Sept. 21st and 22nd.—Meeting of the Survey Committee, N.V.M.A., at 36, Gordon Square, W.C.1, at 11.30 a.m.

Oct. 16th.—R.C.V.S. Committee Meetings, 10, Red Lion Square, W.C.1.

Oct. 17th.—R.V.C.S. Committee and Council Meetings, 10, Red Lion Square, W.C.1.

Oct. 18th.—R.C.V.S. Council Meeting, 10, Red Lion Square, W.C.1.

Oct. 19th and 20th.—N.V.M.A. Annual Meeting, Council Meetings and Demonstrations, in London.

* * * * *

N.V.M.A. Annual General Meeting, 1944

Members of the Association are asked to note that in view of unforeseen local difficulties, the venue and dates of the Annual General Meeting have been changed.

The meeting will now take place at the Connaught Rooms, Great Queen Street, W.C.2, on Thursday, October 19th, 1944, at a time to be notified later.

It is hoped to arrange for the proposed programme of operations and demonstrations to take place on the following day, October 20th, at the Royal Veterinary College, Camden Town, N.W.1.

Council Meetings are also being arranged for October 19th, details to be published later.

Members who intend coming to these meetings are strongly advised to book rooms *without delay*.

* * * * *

Milk Marketing Board

With reference to the advertisement of the Milk Marketing Board published in this issue, our readers will note that the term "agricultural scientist" is used. We understand that this is not meant to preclude persons with a veterinary qualification.

* * * * *

Roll of Honour

We learn with much regret that Captain D. H. Greeves, R.A.V.C., was reported Missing in Burma on July 30th, 1944, and that Captain A. MacD. Fyfe, R.A.V.C., was reported Missing believed Killed in Burma in July, 1944.

* * * * *

PERSONAL

Veterinarian Awarded the D.F.C.—Announcement is made of the award of the D.F.C. to Flying Officer George Robert Taylor, of Keith, Banffshire, a keen member of the veterinary profession who is now serving his country with the same wholehearted enthusiasm and devotion to duty in the R.A.F. Flying Officer G. R. Taylor, who is the son of the late Mr. Alex. Taylor and of Mrs. Taylor, Mountblairy, Banff, qualified at Edinburgh in July, 1940, and joined the R.A.F. in 1941. He trained in Canada and the U.S.A. and was commissioned in 1942. He has completed many low-level sorties over Burma and taken part in long-range sorties over Thailand.

His citation says: "He has shown great skill as a leader. Many of his missions have been against strongly defended areas, including railway yards and oil dumps. He has always pressed home his attacks with consistent courage and determination."

Flying Officer Taylor is now in hospital in India with a fractured ankle.

Dr. A. Eden.—We are informed that on September 1st Dr. A. Eden, M.A., PH.D., F.R.I.C., Dip. Agric. (Cantab.), who joined the staff of the Ministry of Agriculture and Fisheries in 193[illegible] as a Research Officer, was seconded from the Animal Health Board to the Advisory Services Branch of the Ministry. His new station is the School of Agriculture, Cambridge, where he will be working with Mr. F. Hanley, M.A., Advisory Chemist for the Eastern Counties.

Professor Scott Watson's Appointment.—The Minister of Agriculture and Fisheries has appointed Professor J. A. Scott Watson, M.C., M.A., to the newly created post of Chief Education and Advisory Officer to the Ministry.

For the past two years, until recently succeeded by Professor Rae, Professor Scott Watson has represented the Government in the posts, created in 1942, of Agricultural Attaché on the staff of His Majesty's Ambassador to the United States of America and Agricultural Adviser to the High Commissioner for the United Kingdom in Canada. Professor Scott Watson, who has been Sibthorpian Professor of Rural Economy in the University of Oxford since 1925, is a member of the Agricultural Research Council, the Agricultural Improvement Council, the Agricultural Machinery Development Board and other bodies concerned with the progress of British farming.

. . . . . .

Mr. J. K. Knowles, the president of the National Farmers' Union, has been offered the post of general secretary, following the acceptance by Sir Cleveland Fyfe of the newly created office of Political Adviser.

. . . . . .

Mr. C. T. Gimingham has been promoted to the post of Director of the Plant Pathology Laboratory of the Ministry of Agriculture, at Harpenden, to succeed Mr. J. C. F. Fryer, who, as previously announced, has been appointed Secretary to the Agricultural Research Council.

. . . . . .

Dr. H. G. Sanders, Executive Officer to Herts War Agricultural Committee since October, 1941, has been appointed Professor of Agriculture in Reading University, and will take up his new duties at Christmas.

* * * * *

PROPOSED CHANGES IN BULL LICENSING SYSTEM

The news that a departmental committee—the Livestock Improvement Committee—has been in existence for some time, and has in fact already presented proposals to the Minister of Agriculture for drastic changes in the system of bull licensing, has only recently come to the knowledge of the Association.

The committee was constituted as follows: Mr. R. H. Franklin (chairman), Mr. J. Stanley Chivers, Mr. J. L. Davies, Dr. H. Donald, Major A. Douglas, Dr. Hammond, Mr. Anthony Hurd, Mr. J. Mackintosh, Mr. T. Peacock, Mr. N. F. Perkins, Mr. W. A. Stewart, Mr. H. Twinch, Sir Archibald Weigall, Mr. G. Gibbard, Mr. J. Holmes and Mr. C. H. Wake (secretary).

It is understood that the licensing proposals, if adopted, will provide for the following types of licences: One for beef bulls with a dairy pedigree; a second for bulls with official milk records on both the dam's and sire's sides which would show a minimum standard of production; and thirdly, a class of licence for bulls not eligible for the first two but still of licensable standard.

The recommendations of the committee, involving, as they do, matters of the highest eugenic importance for the future of our herds, seem to us to embrace problems upon which the N.V.M.A. should have been asked its views. We greatly regret that the Association has been given no opportunity to express its opinions on a matter so intimately concerned with animal health.

* * * * *

ANIMAL DISEASES RESEARCH ASSOCIATION

Dr. Russell Greig Looks Back

At the annual general meeting of the Animal Diseases Research Association held at Moredun Institute on July 26th, the Director, Dr. Russell Greig, in giving a review of the work of the Institute traced the development and outlined the scope and range of veterinary research.

In the course of his remarks, Dr. Greig pointed out that until comparatively recently the animal to which the attention of the veterinarian had been mainly directed was, of course, the horse, although for many years the importance of controlling the diseases of food animals had become increasingly clear. The diseases of the sheep, however, because that animal had been rarely attended by the veterinary practitioner, had been largely neglected. Dr. Greig remembered 25 years ago, as a young and enthusiastic teacher, rambling over many a Border sheep farm and squatting with shepherds behind many a bieldy dyke-back where he attempted to collect what knowledge he could of the common diseases of the sheep, of the very existence of several of which he was quite ignorant. In this way he eventually obtained enough information to make two or perhaps three lectures for his students—very crude and incomplete lectures these must have been. This state of affairs was soon, however, to be completely changed. The Animal Diseases Research Association was established in 1920 and since then knowledge of the diseases of the sheep had made remarkable advancement. Other research centres concerned with sheep diseases quickly came into being throughout the world and the saving which the veterinary profession had thus effected was incalculable.

When Dr. Greig visited Athens some years ago, the Greek veterinarians welcomed him with a familiarity that he did not at first understand. It was later explained that Greece, like Scotland, was largely a pastoral country, and that the Greeks had recognised that diseases of sheep were of very real economic importance. They had therefore modelled their work on that of Moredun and, indeed, they proved to be as familiar with some of the Institute's literature as Dr. Greig was himself. Modern Athenians certainly owed a great cultural and artistic debt to Ancient Athens and it was something for satisfaction if Edinburgh could repay a modicum of it through the medium of veterinary science.

In war-time veterinary research was not so much concerned with the saving, in pounds, shillings and pence, for the farmer as it was concerned in the conservation of the health of food animals for the State. In this the Animal Diseases Research Association had played, and it was hoped would continue to play, a useful part.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal views of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

* * * * *

VETERINARY EDUCATION: THE LOVEDAY REPORT

Sir,—From the point of view of one who is deeply concerned with the present and future of the Colonial Veterinary Service the Loveday Report is a very welcome indication of the lines along which it is hoped the education of the veterinarian will proceed.

The recommendations in this report are of course based mainly on the requirements of the livestock industry and the profession in the United Kingdom, but I would like to point out that throughout most of the Colonial Empire livestock will play an increasingly important part in future development. It is now being appreciated that in the past animal health and the production of animal products have been gravely neglected and far-reaching schemes are afoot to remedy this state of affairs. The first essential to ensure success in these projects is an adequate and efficient Colonial Veterinary Service.

A Veterinary Officer in the Colonial Veterinary Service must be not only a good veterinarian but also a sound and tactful administrator and I am convinced that by incorporating his education life within a university he will be encouraged to make contact with men engaged in other activities such as medicine, agriculture, forestry and administration so that when he is called upon to advise on and to initiate schemes for the development and welfare of the area in which he is working he will be able to view the matter from a wider aspect than might otherwise be the case.

It is true to say that if we are to attract men of the requisite ability to the Colonial Veterinary Service the terms and conditions of the appointments must be satisfactory, but, given that point, it is up to the profession to ensure that the quality of its teaching and of its entrants is of the highest order. If the recommendations of the Loveday Report are approved in principle, the way seems clear for the achievement of these ends, and I recommend their acceptance by those who have the interests of the Colonial Veterinary Service at heart.

I am, Sir,

Yours faithfully,

H. J. Lowe,

Director of Veterinary Services,

Tanganyika Territory.

Royal Empire Society,
Northumberland Avenue, W.C.2.

. . . . . .

Sir,—The letter from the secretary of "Our Dumb Friends' League" is interesting but provocative.

I maintain that our profession does play a leading part in animal welfare. Any person having the welfare of animals at heart would be more likely to achieve his ambition by working through a highly trained scientific profession than by the indiscriminate support of the innumerable benevolent, but often unscientific societies. With regard to the voluntary hospitals it is very questionable whether they can cope with their problems by solely depending on charity and begging, and in this democratic age man has the right to demand, not to beg.

The voluntary hospitals are staffed by qualified medical men. We do adopt the attitude of the medical profession towards voluntary organisations. We welcome employment but will not cover

up or co-operate with unqualified practice and are entitled to expect some fee for our services. My experience is that the public generally are very kindly disposed to our profession. A certain type of individual, commonly met with in small-animal practice, seems entirely oblivious to any value in the scientific care or treatment of animals. They eagerly support charitable welfare societies and quacks, while they enthusiastically neglect even the most elementary principles of animal welfare in their own pets. The opinions of such a type are wholly untrustworthy, usually libellous and probably constitute the evidence upon which Mr. Robinson bases his astounding, and I think reckless, statement "(*b*) because some establishments . . . are aged, etc., etc."

Unqualified practice arises because it is a most remunerative "racket"; there is practically no capital expenditure in cash or brain and its advertisement is unrestricted. Most veterinary colleges are situated in towns, and all students are exceedingly well instructed in small-animal work, and ready to practice among them, but on qualification find the unholy competition of 30,000 quacks. If these societies are interested in, and honestly believe in animal welfare, they should give unequivocable support to the employment of trained veterinarians and endeavour to suppress all forms of unqualified practice.

In every branch of veterinary practice the profession continually gives charitable attention to the poor man's cat or cow, his dog or horse; but he does not make profit out of self-edvertisement, and nobody blows his trumpet or benevolently pays for whitewashing his surgery, or in the past has interested himself in his training, his work or his future. The Loveday Report clearly shows this neglect, but our profession has great traditions of service, silent service, and this has been built up by the labours of fine unselfish men who have led in animal welfare and will lead further.

A great many of Mr. Robinson's opinions are very sound, but I firmly believe that charity can numb the senses of both he who gives and he who receives, and patronage damns progress. We all need a broad enlightening education—sincerity is not enough; charity is not enough—knowledge and then progress in good faith. Then this torn world may have a future and our youth find faith.

Yours faithfully,

B. G. Catmur.

The Vineyard,
Abingdon, Berks.
August 27th, 1944.

* * * * *

Sir,—As was the case in the days of the French Revolution, the light of reason appears to be dawning in the present controversy.

There should be a conjoint examining board, chosen by the R.C.V.S. and the universities, for the *clinical* subjects. At present the universities have little or no knowledge of these subjects, and if they are to participate in veterinary science, the last thing they desire to see would be a fiasco. If this is agreed upon, we retain and strengthen our one-portal and secure the very great advantages of university collaboration and the generous financial assistance offered and of which we are in sore need.

Unless I am mistaken, the students of the future will themselves determine the existing problem to no small degree. By this I mean that those who have been to a public school, or to one where friends are going on to a university, will be anxious to continue the associations formed, and will endeavour to select a university in preference to a purely veterinary school. The whole process has got to be a gradual one, and throughout any future discussion on the subject, graduates must bear in mind that it is the interest of those who are to follow that alone counts.

It seems clear to me that at one existing centre which has given us not a few of our most brilliant men, the crying and immediate need is for rebuilding, and that it is undesirable from every standpoint to alter its existing status. In my view it is most desirable to have purely veterinary schools unassociated with universities, as well as those that are; for there are incompatibilities in the human make-up as there are in drugs, and in attempting to write a universal prescription for education, the Government committee appears to have overlooked this salient fact; and might achieve more if it set out to establish State schools, leaving the public schools alone.

The one and only modification worthy of consideration in the proposed alteration in the constitution of the Council. R.C.V.S. is, that the principals of existing schools and any that may be established should automatically become and remain members, without having to seek election.

As it stands the report cannot be accepted, but at the same time I for one am not prepared to tear the whole report to shreds, just because it has one point in it—that an unbiased effort might satisfactorily settle—for I think that it would amount to the greatest disservice that I could do to the future generation in our profession.

When it comes to negotiation, those chosen must not be of the frame of mind that coined the old proverb associated with the election of a Pope, which is to the effect that one who goes into the conclave fondly thinking that he has already been chosen, emerges to find that he is still in the same position as before he entered it!

The Loveday Committee has quite rightly devoted its attention to the large animals, and I believe that it will be found that the whole question of the effective control of unqualified practice *by the Government* will largely depend upon the reception and understanding given to this report, which must be decided upon first. Later, when the time comes for this subject to be discussed, and unless we wish to disturb a real hornet's nest and lose valued support, we shall leave the castrator well alone. The veterinary profession has work waiting to be done of a more important and lucrative nature than trying to put this individual out of business in return for fees not worth consideration.

Yours faithfully,

J. F. D. Tutt.

"Rothiemurchus,"
St. Cross, Winchester.
August 26th, 1944.

* * * * *

YEARLING CAST IN BOX

Sir,—On two occasions within recent years I have been told of yearlings having been cast in a box. On both occasions "I said no word to indicate a doubt, but put my thumb unto my nose and spread my fingers out." Would any reader please tell me: (1) Has he or she ever seen a yearling cast in a box (in any corner except that which contains the trough); (2) How does this accident occur; or (3) Tell me another fairy tale.

Owners may say many things about their horses, but veterinary surgeons should remember advice given by the late Professor Craig, namely, of an owner's statement believe only that which is compatible with what you see.

I once examined a yearling said to be cast in his box. Before making a thorough examination I had a look over the paddock and then treated the colt for stifle lameness. He made an uneventful recovery, had a chequered career, and won many races, including the Irish Grand National, and is now resting in a famous racing establishment in Ireland. His name is "Impudent Barney."

Yours faithfully,

P. E. Mullaney.

Veterinary College of Ireland,
Ballsbridge, Dublin.
August 19th, 1944.

* * * * *

DISADVANTAGES OF THE MODERN DOG SHOW

Sir,—I was very interested in the discussion on "The Advantages and Disadvantages of Livestock Shows" which appeared in the last two issues of *The Veterinary Record*, but I was surprised to find anyone supporting the modern dog show.

Surely the showing of dogs is attended by few, if any, advantages.

Notably in size we see the effects of breeding and showing solely for fashion and a first prize. The modern wire- and smooth-haired fox terriers, for example, have been dwarfed in comparison with what they used to be, and the Airedale of to-day is little larger than the old-fashioned foxies. These breeds were originally bred for ratting, and as guards, but their modern forms can scarcely be expected to recognise a rat, let alone kill it, and how many modern retrievers of show bench standards could carry a full-sized goose, and clear a five-barred gate with it in their mouths, which used to be the criterion of a good gun dog?

Another example is the obliteration of the liver and white coat of the Irish setter, and the substitution of the now fashionable all liver one which renders the dog extremely difficult to detect when working in thick cover. The inbreeding, too, required to produce this variety has been attended by a corresponding drop in the intelligence of this breed.

Again what possible advantage is to be gained by the current fashion of breeding Pekes with flat noses, a conformation which only predisposes to respiratory difficulties, and by no means enhances their beauty?

I cannot see that it matters to any great extent whether a dog conforms exactly to the points laid down as being correct for his breed, as long as he is best suited to the work for which he was bred, be it with sheep, guns, or as a guard, but let him be large enough, and in every other way suitably conformed to enable him to carry out his job of work efficiently. The modern trend of fashion however, as fostered by shows, is to reduce the size of the vast majority of breeds to ridiculous proportions, and this fact, together with the other examples I have cited, and those brought up during the discussion, forces me to decry the modern dog show-bench as a menace to the future of the canine race, a menace which can only be obliterated if the veterinary profession takes it upon itself to extend a much more evident guiding hand in the sphere of dog breeding.

Yours faithfully,

Richard I. C. Hyam.
(Final Year, Glasgow.)

10, Broomhill Avenue, Glasgow W.1.
August 22nd, 1944.